

Listing of Claims:

1 – 28 (Canceled)

29. (New) A method for analyzing a change in the functionality of the heart and the respiratory system of a patient, comprising:

- identifying the respiratory activity and cardiac sounds;
- temporally segmenting said respiratory and said cardiac sounds to express the segments of physiological rhythmicity ;
- extracting stable features of the heart sounds with respect to their timing in the respiratory cycle, thus providing synchronized stable features for diminishing stochastic variability;
- averaging the features of segments of heart sounds with respect to the corresponding respiratory cycle whilst preserving the temporal variability of said segments;
- determining the extent of temporal variability of groups of synchronized stable sound features, and
- detecting change over time of at least one feature in a synchronized stable sound relative to a baseline .

30. (New) A method for analyzing a change in the functionality of the heart and the respiratory system of a patient as in claim 29, said method used for synchronizing a heartbeat synchronized system, said analyzing based on the information derived from the group of items consisting of: heart sounds amplitude, interval between them, amplitude and frequency content, and any combination thereof.

31. (New) A method for analyzing a change in the functionality of the heart and the respiratory system of a patient, comprising:

- identifying the respiratory activity and cardiac sounds;
- temporally segmenting respiratory and sounds and cardiac electrocardiographic signals to express the segments of physiological rhythmicity ;
- extracting stable features of the heart sounds with

Application Number: 10/532,178

Amendment dated: January 10, 2010

Reply to Office Action of: March 31, 2009

respect to their timing in the electrocardiographic signals, thus providing synchronized stable features for diminishing stochastic variability;

- averaging the features of segments of heart sounds with respect to the corresponding electrocardiographic signals whilst preserving the temporal variability of said segments;
- determining the extent of temporal variability of groups of synchronized stable sound features, and
- detecting change over time of at least one feature in a synchronized stable sound relative to a baseline.